WHAT IS CLAIMED IS:

1. A hierarchical approximating method of shape data for approximating shape data into data of a desired resolution, comprising the steps of:

evaluating a degree of importance of each edge constructing said shape data;

removing an unnecessary edge on the basis of a result of an evaluation of said edge; and

determining a position of a vertex after said unnecessary edge was removed.

2. A hierarchical approximating method of shape data with an image for approximating shape data to which image data was adhered into data of a desired resolution, comprising the steps of:

deciding whether which edge of the shape data is removed at the time of the approximation;

deciding a position of a new vertex in said shape data after an edge removal performed on the basis of said decision about the edge removal; and

performing a removal of an unnecessary vertex in the image data adhered to said shape data and a movement of vertices on said image data in accordance with a position of a new vertex in said shape data in accordance with outputs from said edge removal deciding step and said vertex movement deciding step.

3. A method according to claim 1 or 2, wherein said shape data is 3-dimensional polygon data.

4. A method according to claim 1 or 2, wherein in said evaluation of the edge, a change amount of a volume of a shape specified by said shape data when said edge is removed is obtained and it is decided that as said volume change amount is small, the degree of importance of said edge is small.

5. A method according to claim 1 or 2, wherein in said evaluation of the edge, a change amount of a volume specified by said shape data when said edge is removed and a length of said edge are obtained, it is decided that as said volume change amount is small, the degree of importance of said edge is small, and it is decided that as said area change amount is small, the degree of importance of said edge is small, and it is also decided that as said length of the edge is small, the degree of importance of said edge is small.

6. A method according to claim 4 or 5, wherein in said evaluation of the edge, said degree of importance of the edge and a degree of importance of an edge that is separately given by a user are used, and it is decided that from an edge in which both of the degree of importance of said edge and the degree of

importance of said edge which was separately given are low, the degree of importance of said edge is small.

7. A method according to claim 1 or 2, wherein said vertex is arranged at a position where said volume change amounts in association with said edge removal are equal on the vertex side of one end and the vertex side of another end constructing said edge to be removed for the position of said vertex.

8. A method according to claim 1 or 2, wherein said vertex is arranged at a position where said volume change amount by said edge removal is minimized.

9. A method according to claim 1 or 2, wherein when the shape of the portion where said edge is removed is a concave or convex shape, said vertex is decided at a position where said volume change amount is minimized, and when the shape of the portion where said edge is removed is a S-character shape, said vertex is arranged at a position where said volume change amounts are equalized on the vertex side of one end and the vertex side of another end constructing said edge to be removed for said vertex position.

10. A method according to claim 1 or 2, wherein said vertex is arranged at a position where the vertex

remaining after said edge removal is located at the same position as that before said edge removal.

11. A method according to claim 2, wherein in said step of deciding the removal and movement of said image data, the vertex of said image data corresponding to the vertex of the edge to be removed in accordance with an output from said step of deciding said edge removal is removed.

12. A method according to claim 2, wherein in said step of deciding the removal and movement of said image data, a new position of the corresponding vertex on said image data is determined in accordance with an output of said step of deciding the vertex movement and in accordance with the movement of the vertex to the new position in said shape data.

13. A method according to claim 12, wherein in said step of deciding the removal and movement of said image data, an amount of movement of the vertex of said image data is obtained by interpolation from coordinates between two vertices on the image data which inherently correspond to the removed edge.

14. A method according to claim 12 or 13, wherein in the interpolation of the vertex of the image data

which is decided in said step of deciding the removal and movement of said image data, the movement amount is obtained by using a linear interpolation.

15. A method according to claim 12, 13, or 14, wherein in said step of deciding the removal and movement of said image data, an interpolation coefficient of the vertex movement used when deciding said vertex movement is used as it is and the movement amount of the vertex of the image data is decided in accordance with an output from said step of deciding the vertex movement.

16. A method according to claim 2 or 11, wherein in said step of deciding the removal and movement of said image data, when the edge as a removal target exists on an outline of said image data, if an area change amount after the edge removal exceeds a predetermined range, the edge as said removal target is not removed.

17. A method according to claim 2 or 12, wherein in said step of deciding the removal and movement of said image data, an area change amount of said image data to be influenced by the approximation is obtained and the movement amount of said image data coordinates is decided so that said change amount lies within a

predetermined range.

18. An approximating apparatus of figure data for approximating shape data to a data of a desired resolution, comprising:

evaluating means for evaluating a degree of importance of each edge constructing said shape data;

edge removing means for removing an unnecessary edge on the basis of a result of an evaluation of said edge; and

vertex position deciding means for deciding a position of a vertex after said unnecessary edge was removed.

19. A hierarchical approximating apparatus of shape data with image data for approximating shape data to which image data was adhered into data of a desired resolution, comprising:

edge removal deciding means for deciding which edge of the shape data is removed at the time of an approximation;

vertex movement deciding means for deciding a position of a new vertex in the shape data after the edge removal; and

image data removal movement deciding means for performing a removal of the unnecessary vertex in the image data adhered to said shape data and a

movement of the vertex on said image data in accordance with the position of the new vertex in said shape data in accordance with outputs from said edge removal deciding means and said vertex movement deciding means.